Misc. Publication A23

THE KENT INCORPORATED SOCIETY
FOR PROMOTING EXPERIMENTS IN
HORTICULTURE

IMPERIAL MYCOLOGICAL
27 JUNE 1938
INSTITUTE

SUPPLEMENTARY
ANNUAL REPORT

(TWENTY-FIFTH YEAR)

GENERAL DEVELOPMENT AND ACTIVITIES

EAST MALLING RESEARCH STATION

Near MAIDSTONE

KENT

1st January, 1937, to 31st December, 1937

Published May, 1938

GOVERNING MEMBERS OF THE SOCIETY

(Appointed under the Revised Articles of Association, June 1936)

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Professor V. H. BLACKMAN, Sc.D., F.L.S., F.R.S., Imperial College, South Kensington, London, S.W.7.

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R. M. WILSON, Esq., B.Sc.Agric., South-Eastern Agricultural College, Wye, Kent.

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E. A. BUNYARD, Esq., F.L.S., The Royal Nurseries, The Broadway, Maidstone, Kent.

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C. E. W. CHARRINGTON, Esq., 16 Southwark Street, London, S.E.1.

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Appointed by the National Farmers' Union (Central Council, London):

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A. AMOS, Esq., Spring Grove Farm, Wye, Kent.

ALFRED DAY, Esq., J.P., Great Tong Farm, Headcorn, Kent.

B. R. DIXON, Esq., Cambridge, Greenstreet, Sittingbourne, Kent. (*Deceased November*, 1937.)

S. R. DIXON, Esq., Cambridge, Teynham, Sittingbourne, Kent. (*Appointed January*, 1938.)

W. T. EDMONDS, Esq., Allington Farm, Maidstone, Kent.

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J. M. ROBERTSON, Esq., Beluncle, Hoo, Rochester, Kent.

J. F. TOWNER, Esq., Salts Farm, Loose, near Maidstone, Kent.

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Appointed by the Associate Members of East Malling Research Station:

Capt. R. WELLINGTON, Worth, Hele, Bradninch, S.O., Devon.

A. T. MILLER, Esq., Wested Farm, Swanley, Kent.

MEMBERS OF THE EXECUTIVE COMMITTEE

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Capt. R. WELLINGTON.

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H. V. TAYLOR, Esq., O.B.E., D.Sc.(Lond.), A.R.C.S.
Horticultural Commissioner, Ministry of Agriculture.
W. ROGERS, Esq., Court Lodge, Horton Kirby, Kent.

The Director:

R. G. HATTON, Esq., C.B.E., M.A.(Oxon.), D.Sc.(Lond.), V.M.H.

The Representative of Staff Council:

M. H. MOORE, Esq., Dip.Hort.Sci.(Reading).

STAFF

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Assistant Director : H. WORMALD, D.Sc.(Lond.), A.R.C.S., D.I.C.

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Assistant : H. B. S. MONTGOMERY, B.A.(Dublin), Ph.D.(Lond.), D.I.C. (Part time.)

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W. S. ROGERS, M.A., Dip.Hort.(Cantab.).
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Miss M. G. WEBB, B.Sc.Hort.(Reading). (*Resigned December,* 1937.)
Miss C. P. FIELD, B.Sc.Hort.(Reading).
Miss E. C. THOMPSON.
Lab. and Field Assistants : C. H. W. SLATER.
Miss E. C. M. ASHDOWN.
Miss F. M. HODGE.
Miss M. E. J. BROAD.

Plant Breeding : H. M. TYDEMAN.

Propagation : R. J. GARNER, N.D.H., Dip.Hort.Sci.(Reading).
D. H. HAMMOND.

Marketing Investigations : A. C. PAINTER.
Miss B. L. WATES, B.Sc.Hort.(Lond.). (*Resigned October,* 1937.)
Lab. Assistant : R. A. WARD.

Hops : F. H. BEARD, Hort.Dip.(Wye).

Walnuts : A. W. WITT, N.D.H. (*Consultant*).

Statistics : T. N. HOBLYN, Hort.Dip.(Wye).
Miss J. L. EDGAR, B.Sc.(Lond.). (*Resigned December,* 1937.)
S. C. PEARCE, B.Sc.(Lond.). (*Appointed January,* 1938.)
Lab. Assistant : Miss J. S. PLACKETT.

Plant Physiology : M. C. VYVYAN,* M.A.(Cantab.).
H. L. PEARSE, Ph.D.(Lond.), A.R.C.S., D.I.C., of the Imperial College of Science and Technology.
Lab. Assistant : G. F. TROWEL.

* Recognized Teacher of the University of London.

Bio-Chemistry : W. A. ROACH,* D.Sc.(Lond.), A.R.C.S., D.I.C., A.I.C.
B. G. F. LEVY, B.A.(Cantab.), Hort.Cert.(Reading). (*Resigned December*, 1937).
J. K. EATON, B.Sc.(Wales), M.Sc.Tech.(Manc.). (*Appointed October*, 1937.)
Lab. Assistants : R. CORNFORD. (*Resigned July*, 1937.)
F. R. USMAR. (*Appointed January*, 1938.)

Mycology and Bacteriology : H. WORMALD,* D.Sc.(Lond.), A.R.C.S., D.I.C.
R. V. HARRIS, B.Sc.(Lond.), A.R.C.S., D.I.C.
H. B. S. MONTGOMERY, B.A.(Dublin), Ph.D.(Lond.), D.I.C. (Part time.)
Lab. Assistants : Miss R. HOAR. (*Resigned November*, 1937.)
R. HUMPHREYS. (*Appointed January*, 1938.)

Entomology : A. M. MASSEE,* D.Sc.(Lond.), F.R.E.S.
R. M. GREENSLADE, B.Sc., A.R.C.S.
Lab. Assistant : F. CRONK.

Insecticides and Fungicides :

Chemistry : H. SHAW, M.Sc.Tech., Ph.D.(Manc.).
Lab. Assistant : R. N. PIERCE.
J. J. T. HUMPHREY.

Entomology : W. STEER, B.A.(Cantab.)
R. G. GAMBRILL, *Recorder.*

Mycology : M. H. MOORE, Dip.Hort.Sci.(Reading).
Lab. Assistant : J. JEFFERYS.

Guide Demonstrator and Exhibitions Officer : H. C. CHAPELOW, *Meteorological Records.*

Photographer : Miss K. E. CORNFORD.

Lab. Stewards : Miss K. E. CORNFORD.
R. G. GAMBRILL.

Advisory Officers in Commercial Fruit Growing to the Kent Education Committee stationed at East Malling Research Station : W. G. KENT, N.D.H., and C. R. THOMPSON.

* Recognized Teacher of the University of London.

ADMINISTRATION.

Secretary : C. T. ROYLE.

Book-keeper : P. R. WOOD.

Director's Personal Secretary : Miss L. E. ALEXANDER.

Clerical Staff : Miss G. O. ARDAGH, Miss J. BANKS, Miss J. M. COY, Miss J. M. CRAYFORD, Miss J. D. MARTIN, Miss L. F. R. OWEN and Miss M. I. SUNNUCK.

VISITORS.

Visits may be paid to the Research Station on any weekday *by appointmen* (Saturday afternoon under exceptional circumstances only).

Passenger Station : East Malling Halt (Southern Railway).

Goods Station : Aylesford (Southern Railway).

Bus Services :

FROM MAIDSTONE by the Maidstone and District Motor Services Limited, every 20 minutes from Maidstone to East Malling Church.

FROM LONDON a regular service of Maidstone and District Coaches from the London Coastal Service Limited, Victoria Coach Station, Buckingham Palace Road, S.W.1, may be of assistance to Visitors. The Coaches call at East Malling on certain inward and outward journeys.

For Visitors coming by road DITTON CORNER on the main London-Maidstone Road is the turning to the Research Station.

Telephone : Aylesford 7294 (2 lines).

Telegrams : Research, East Malling.

THE IMPERIAL BUREAU OF HORTICULTURE AND PLANTATION CROPS

accommodated at East Malling Research Station.

STAFF.

Director : RONALD G. HATTON, C.B.E., M.A.(Oxon.), D.Sc.(Lond.), V.M.H.

Deputy Director : D. AKENHEAD, M.A.(Oxon.), B.Sc.Agric.(London.)

Assistants : G. ST. CLAIR FEILDEN, B.A.(Oxon.)
G. K. ARGLES, Dip.Hort.(Wye), A.I.C.T.A. (*Resigned September*, 1937.)
B. VON HEISELER, F.I.L. (*Appointed November*, 1937.)

Clerical Staff : Miss M. B. ROGERS, Miss M. M. DURLING, and Miss F. R. L. CLEGGATT.

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GENERAL DEVELOPMENT AND ACTIVITIES

EDITORIAL.

The presentation of our Twenty-fifth Annual Report is naturally an occasion for some stocktaking. It is at least certain that the Institute has not become static and is still capable of continued useful development. Just as our orchards are now beginning to yield prolific crops and should have another twenty-five years' profitable life, so the labour of the little band of investigators, who have maintained an almost unbroken continuity of work and service, has manifested itself through a record output of scientific reports in 1937, with plenty of promise to come. For years past we have helped to train and send out many of the younger horticulturists, whilst those who guide the activities of our different sections—and hold an average record of over fourteen years' service apiece—realized that the solution of their various problems could only unfold with the seasonal developments of their perennial plants over a series of years, and so the fruits of their patient perseverance and loyalty to the Institute are now being amply harvested. It is not too much to claim that practice has in recent years been revolutionized as a result of strides which have been made in our theoretical knowledge of the "build-up" and potentialities of the tree fruits, whilst careful investigations into the troubles of currants, raspberries and strawberries have resulted in the introduction of rejuvenated strains which have made their own way in the industry throughout the country. Yet new vistas are only just beginning to open up in the selection of new, better and resistant plants, in the quicker diagnosis of trouble and in more intelligent cultural, nutritional and pest control methods. Some aspects of all these subjects are dealt with in the sixty-four scientific publications issued during the year.

The research staff has continued to work uncomplainingly under conditions of considerable congestion in the laboratories, a state of affairs naturally accentuated by the otherwise very helpful and welcome presence of so many graduate workers. Although our Committees gave much attention to the problem, up to the time of going to press, it is still unsolved, owing to the financial difficulties resulting from an all-round rise in price, but there is now a good prospect that more accommodation may be available before the laboratories once again fill up for the winter sessions.

The Trustees of our little Endowment and Development Fund have made the very most of their small asset both to relieve this pressure on our accommodation and to secure the increase of our experimental area.

There is no question, as the records of the Technical Section show, that an ever increasing interest is being taken in the practical application of the Station's findings, but until it is more generally acknowledged that such activities are a normal and essential part of a Research Institute's functions, our services in this direction are bound to be circumscribed. It is a welcome sign that the Higher Education branch of the Kent Education Committee has made some recognition of the value of these services, and expressed the wish that they should be extended.

Although we are able to report a record live Associate Membership of 1,357 at the end of the year, we still feel confident that there must be many hundreds of commercial growers and amateurs interested in our work for fruit culture who would like to read

our Annual Report, to share in the distribution of selected plants and to receive notices of the open days which have become such a feature in recent years. After all these obligations to our Members have been fulfilled, there is not much of the annual subscription left to be applied to the development of our investigations. It is only by greatly increasing our number of Associates that the scheme can thus free the Institute from continual financial worries. The difficulties experienced every few years in continuing the long-distance walnut investigations are a case in point. Time and energy should not be wasted in irritating " hand to mouth " appeals for work which should be safeguarded without hindrance. Again, hop growers are pressing for an intensification of the investigations of Verticillium Wilt disease. It is only the " man power " which is lacking, and this a larger Membership fund could supply.

The amount of spontaneous and productive collaboration and discussion between other institutions and our various sections is a most encouraging example of that voluntary co-operation in research which is born of a mutual interest and common enthusiasm. Fruit growers, too, have invariably been most willing to offer help and facilities for the pursuit of our investigations, and, in presenting our Twenty-fifth Report, we wish, once again, to extend our grateful thanks both to our fellow investigators and to the fruit growing industry for their continued help and support in many directions, and to ask for its continuance and extension.

Obituary.

It is with regret that we record the death of Mr. Bridges R. Dixon, of Cambridge, Greenstreet, Sittingbourne, who had been a representative of the Kent Branch of the National Farmers' Union ever since 1929.

We also record our sympathy with the Long Ashton Research Station in the loss of their Secretary, Mr. P. West, who had been associated with them for very many years.

Committees.

It will be remembered that the Governing Body was elected for a period of three years following the revision of the Articles of Association in April, 1936.

We are glad to welcome to our Governing Body, Mr. S. R. Dixon, who has been nominated by the Kent Branch of the National Farmers' Union in the place of his late father, Mr. Bridges R. Dixon.

Seventeen Committee Meetings were held, four being Executive Meetings, during 1937.

Executive Committee.

Mr. S. W. Mount was unanimously re-elected Chairman for the ensuing year, with Professor V. H. Blackman, Vice-Chairman, and Mr. T. Neame, Chairman of Finance.

Mr. G. T. Cook is also welcomed as a Member of the Executive Committee. He took the place of Mr. H. W. Harman on his retirement as President of the Institute of Brewing.

In view of the congestion in the laboratories which was reported last year, the Committee has given much time and thought to various proposals from the Building Sub-Committee who have been dealing with the necessary plans and details for additional accommodation.

A scheme was put up to the Ministry of Agriculture on 13th April, 1937, and approved in August, but due to the increased cost in materials the amount approved was approximately £2,000 short of the lowest estimate for the work. The matter is therefore delayed pending further investigations.

In March an adjacent smallholding of approximately 10 acres, known as Merryweather, became vacant and its acquisition occupied the attention of the Committee. Eventually it was leased to the Station through the good offices of our Trustees.

Mr. M. H. Moore was re-elected Staff Representative on the Executive Committee for the year, and Mr. W. Rogers of Horton Kirby has been co-opted for the ensuing year.

Mr. T. Neame (Chairman of the Finance Sub-Committee) was again nominated and duly elected to serve on the Kent Agricultural Committee as the Society's representative.

The Director, Dr. R. G. Hatton, has been invited to serve on the Hop Research Committee of the Institute of Brewing and also on the Board of Studies in Horticulture of the University of London. He has also served upon the following Committees :— the Horticultural Advisory Council and its Sub-Committee on the production of virus-free plants, the Horticultural Meteorological Sub-Committee, the Council of the Horticultural Education Association, and the Research and Advisory Sub-Committee of the S.E.A. College, Wye.

Annual Meeting.

The Seventeenth Annual General Meeting and Associate Members' Day were held on Tuesday, 1st June, 1937, the details of the meeting and the arrangements for the day appear later in this report.

An Extraordinary General Meeting was held on the same date to approve an alteration to the Articles of Association whereby the University of London was given a place on the Executive Committee.

Sub-Committees.

The Finance Sub-Committee (Chairman, Mr. T. Neame) met on seven occasions. The financial problems in connection with various building plans have been very thoroughly dealt with and the recommendations put forward have enabled the Executive Committee to secure a £ for £ grant from the Ministry.

The Buildings Sub-Committee (Chairman, Mr. Talbot Edmonds) met on three occasions and have given very thorough consideration to the various proposals for additional accommodation both for administrative and research purposes and the connecting up of the cesspool drainage to the main sewer.

It has been found possible to complete the new virus house and the insectary, and good progress has been made with the main drainage, but, as mentioned above, the additional office accommodation is in abeyance for the time being.

The Post-graduate and Staff Sub-Committee (Chairman, Professor V. H. Blackman) met in December, and a report on the work of the post-graduates and other students was reviewed. The number of post-graduates on 1st January, 1938, was eight.

The Sub-Committee received with regret the resignation of Mr. E. M. Lloyd from the Sub-Committee.

The Plant Prices Sub-Committee (Chairman, Mr. Talbot Edmonds) held their annual meeting in May and recommended the prices for the distribution of the surplus materials from the experimental nurseries for the ensuing season.

The Hop Sub-Committee (Chairman, Mr. Arthur Amos) met in August and reviewed the hop investigations at East Malling, a report on the last ten years' hop research having been circulated to members of this Committee.

Arrangements were also agreed upon for the closer co-operation of the hop programme between Wye and East Malling. These suggestions had arisen out of a joint meeting of the investigators concerned.

A recommendation was made asking the Institute of Brewing to give consideration to a request to undertake controlled experimental brewing trials of seedling hops in order that more information on the question of flavour could be obtained.

Professor E. S. Salmon of Wye College gave his annual report of the work at Wye.

Mr. C. E. W. Charrington, the new President of the Institute of Brewing, was elected to this Committee in the place of Mr. H. W. Harman, resigned.

The Fruit Sub-Committee (Chairman, Mr. C. S. Smith) met in November and reviewed the position regarding the large-scale apple trials, the overworking of Newton Wonder trees, and the Frost Damage Investigations, and inspected the new seedling apples in the plantations.

It is with regret that the resignation of Mr. E. I. Overy was reported owing to ill-health. The Sub-Committee recorded their appreciation of his advice and help over many years.

Mr. H. Tompsett of Marden was elected to the Sub-Committee.

The Annual General Meeting and Associate Members' Day.

The Annual General Meeting was held on Tuesday, 1st June, the Seventeenth Ordinary General Meeting of the Society being held in the morning at Ditton Laboratory by courtesy of the authorities. The meeting was attended by 105 members, and was presided over by the Chairman, Mr. Spencer W. Mount. The Director presented the Twenty-fourth Annual Report and Supplement. Capt. R. Wellington proposed and Mr. G. T. Cook seconded the adoption of the Report and this was approved. Mr. T. Neame, Finance Chairman, then presented the Balance Sheet for the year ended 30th September, 1936. Mr. J. E. Sandall proposed and Mr. J. M. Robertson seconded the adoption of the financial report, and this was approved. The Eleventh Annual Meeting of Associate Members was held at East Malling Research Station. The fact that the N.F.U. Annual Fruit Tour was being made in Kent this year afforded us the opportunity of extending to them an invitation to attend Members' Day as special guests of the Station. This opportune combination of events brought a record gathering of over 600 to lunch in the Packhouse to welcome the Minister of Agriculture, the Right Hon. W. S. Morrison, M.C., K.C., M.P. Mr. Spencer Mount from the Chair extended the greetings of the company to the Minister, who in reply referred to the part played by the Station in what he described as "the great work of unifying healthy stock and healthy land in healthy conditions." The High Sheriff of Kent, Sir E. W. Meyerstein, J.P., thanked the Minister for coming down at a very busy time of the year and spoke enthusiastically of the work of the Station.

Amongst those present at the luncheon were the Right Hon. Lord Northbourne, Mr. A. Bossom, M.P. for Maidstone, and Mrs. Bossom, Lieut.-Colonel C. E. Ponsonby, M.P. for Sevenoaks, Mr. W. R. Elgar, Chairman, Kent Agricultural Education Committee, Mr. W. H. Whitehead, Under-Sheriff of Kent, Mr. J. Hillier French, J.P., Mayor of Maidstone, Mr. J. W. Pye, Chairman, Kent County Branch N.F.U., Mr. C. Nathan and Dr. H. V. Taylor, Ministry of Agriculture, Mr. E. Salter Davies, Kent Education Committee, Dr. L. Haden Guest, Secretary, Carnegie Trust, Major C. E. Pym, Vice-Chairman of K.C.C., General Sir Ivor Maxse and Lady Mary Maxse, Mr. E. H. Havelock, Agricultural Research Council, Sir Wm. G. Lobjoit, N.F.U., Mr. and Mrs. A. W. Shillan, Worshipful Company of Fruiterers, Dr. C. West, Ditton Laboratory, Mr. C. E. W. Charrington, President, Institute of Brewing, Mr. R. M. Wilson, Wye College, Dr. K. Barratt, Swanley College, and Sir Chas. Howell-Thomas.

In the afternoon the Minister made a tour of the plantations and laboratories before leaving for London to keep an engagement in the House of Commons. Meanwhile, the Members and visitors were conducted in parties to eight demonstration talks given by members of staff in different parts of the experimental plantations. The object of the demonstrations was to give our members some idea of how a research worker looks at a fruit plant and of the central plan behind his experiments. Mr. Rogers and Mr. Harris dealt respectively with the cultural and disease aspects of the strawberry plant. Miss Beakbane and Miss Thompson described a pomologist's experiment to find out where rootstock influence resides, and Dr. Pearse dealt with the same problem as a physiologist. Mr. Garner and Mr. Chang spoke on the problem of incompatibility between stock and scion ; Dr. Roach discussed the importance of mineral deficiencies in fruit tree nutrition ; the Insecticides and Fungicides Section explained how the chemist and the pathologist combine in the research for better methods of controlling diseases and pests, and Mr. Dicker described the process by which the entomologist works out the life history of a new insect pest.

Tea in the Packhouse concluded the programme for the day.

Finance.

A summary of the Research Account and the Experimental Farm Account for the financial year, 1st October, 1936, to 30th September, 1937, is given below.

Research Account.

1st October, 1936, to 30th September, 1937.

Expenditure.	£	s.	d.
Research and Administrative Salaries and Superannuation	13,177	19	1
Laboratory Expenses and Equipment	1,042	15	5
General Maintenance Expenses	2,879	8	0
	£17,100	2	6
Special Grants :			
Salaries and General Expenses	1,166	14	0
Balance carried forward at 30.9.37	117	17	3
	£18,384	13	9

Income.	£	s.	d.
Grant from Ministry of Agriculture	15,796	4	4
Contributions from Public Bodies	515	0	0
Sundry Receipts	788	11	2
Balance (being excess of expenditure over income) ..		7	0
	£17,100	2	6
Special Grants :			
Balance in Hand, 30.9.36 ..	263	8	0
Sundry Grants	1,021	3	3
	£18,384	13	9

Experimental Farm Account.

1st October, 1936, to 30th September, 1937.

Expenditure.	£	s.	d.
Farm Valuation as at 30.9.36	10,896	13	5
General Farm Wages ..	8,766	10	2
Manures and Sprays ..	470	11	4
General Hop Expenses ..	921	2	2
General Expenses	3,850	1	10
	£24,904	18	11

Income.	£	s.	d.
Farm Valuation as at 30.9.37	10,281	12	8
Ministry of Agriculture—Maintenance Grant	1,800	0	0
Sales of Produce and Crops ..	10,686	13	6
Balance (being excess of expenditure over income) ..	2,136	12	9
	£24,904	18	11

The bank overdraft at 30th September, 1937, was £5,569, against a figure of £3,920 at 30th September, 1936.

From a financial point of view the year has been a very difficult one, but it has been possible to keep within the research and maintenance grants provided in spite of the continued rise in the cost of all materials. It must not be overlooked that the maintenance grant has remained stationary for the past eight years whilst the staff has practically doubled, and in view of the general increase in costs, particularly in fuel, light and laboratory materials, it may be difficult, if not impossible, to continue the work on the same basis unless an additional amount is provided to meet the increased costs. It is earnestly hoped this position will be appreciated by those in authority.

We have pleasure in again recording our thanks to the Agricultural Committees of the Kent, East Sussex, West Sussex and Essex County Councils for their recommendation for the continuance of their grants, and we also acknowledge with thanks the renewal of the annual grants from the Research Fund Committee of the Imperial Chemical Industries, and the United Potash Company, Ltd.

With regard to the Farm Account, the increase in farm wages will be noted, and it is to some extent inevitable as experimental orchards grow larger ; the increase is also due to exceptional demands during the year. It must be remembered that the bigger the crop in the experimental orchards, the greater will be the experimental labour in handling them.

It is satisfactory to record an increase in the income for the farm from the sale of its various produce and crops, the amount being £10,686 against the previous year's figure of £7,267.

Special Grants.

We are glad to be able to state that the grant from the Agricultural Research Council for the investigations of Insecticides and Fungicides has now been stabilized in the block grant as from the 1st October, 1936.

The Ministry renewed their grant to the work stationed here at their request for continuing the Meteorological investigations.

We have to report that the last £50 of money raised by private subscription for walnut investigations will be absorbed by 30th September next, and it is urged that some action may be taken by those interested in this work to provide a further minimum amount of £50 per annum to continue the investigations.

MEMBERSHIP SCHEME.

The membership on 31st December, 1937, was 1,357, being an increase of 63 during the year. The number of new members registered was 114, and it is with regret that we record the death of 13 members ; 38 memberships have lapsed for various reasons.

It will be noted in the statement showing the income and expenditure that the amount provided to supplement the existing Ministry grants for research purposes has considerably increased, and the value of this Fund for this purpose cannot be over-estimated.

While the membership is steadily increasing, we are still aiming at the figure set by our late Chairman, Mr. Percy Manwaring, of not less than 2,000 members. It is hoped that every effort will be made during the current year—1938—when the Station is presenting its Twenty-fifth Annual Report, to ensure that the Membership is not less than this number by 31st December next.

ASSOCIATE MEMBERS' FUND.

Receipts and Payments Account for the Year ending 30th September, 1937.

EXPENDITURE.	£	s.	d.	INCOME.	£	s.	d.
To Contributions to Salaries and Grants	1,076	17	10	By Balance at 30th September, 1936	2,609	13	7
,, Stationery, Postages and General Expenses ..	110	17	9	,, Donations	51	18	0
,, Part Cost of Printing and Postage on Annual Report	226	0	0	,, Subscriptions	1,390	10	6
,, Members' Day Expenses ..	158	5	4	,, Sale of Spray Calendars ..	2	14	0
	£1,572	0	11				
,, Balance of the Fund at 30th September, 1937	2,482	15	2				
	£4,054	16	1		£4,054	16	1

DEVELOPMENT AND ENDOWMENT FUND.

The Station is indebted to our Trustees, Sir Bernard Greenwell, Lord Wolmer and Sir Ivor Maxse, for the way in which they are taking a live interest in maintaining this Fund.

While Newgates and Deadman Field are farmed to ensure a reasonable return for development purposes, they have been put at the disposal of the Station for large-scale field spraying trials and strawberry investigations.

In addition, by leasing the adjoining smallholding of Merryweather, they have made it possible for the Station to get control of an important piece of ground adjoining its experimental nurseries.

The Trustees have also given sympathetic consideration to a recommendation from the Executive Committee that they should use their Development and Endowment Fund to assist in providing the necessary £ for £ on the new building schemes above referred to.

LAND AND BUILDINGS.

As chronicled above, during the year a further 10 acres of land adjoining the Research Station property to the east of the parish road has been secured for the Station.

Unfortunately, since then, quarrying operations have unexpectedly developed in the area, and considerable anxiety is felt for the future of the land on that side of the road.

With regard to buildings, early in the year the Station set out to discuss with our architect, Major Maule, plans for its full building requirements, including the long-felt want of a combined library and conference room, caretakers' house, etc. Our architect produced attractive plans, the estimated cost of which, however, came to some £20,000.

Since no considerable support for this project seemed likely to materialize from outside sources and the Committee felt that no fresh call could be made on the industry, a much smaller scheme of building, allowing the office staff to be centralized in some twenty offices, was planned. These plans were approved, but unfortunately when tenders came in the cost was approximately £2,000 more than anticipated. This has involved fresh negotiations with the Ministry of Agriculture, and the matter is at present under reconsideration. It is hoped some decision may be given at an early date, as it is impossible to consider another winter with the very serious overcrowding experienced during the past months.

The building scheme included a new Insectary and a Virus House for further investigations by Dr. A. M. Massee and Mr. R. V. Harris into various problems, and both houses have been completed and are a valuable asset to this work.

The recommendations to connect all buildings to main drainage received approval, and it is hoped the necessary mains will be laid in the early part of this year and the work completed before the end of March, 1938.

A farm implement shed, Dutch barn type, size 60 feet by 30 feet by 10 feet, has been provided and erected in Church Fields. The Station would like to acknowledge the assistance given by Capt. James Day.

All buildings have been maintained in good order and the west and south ends of the Orchard House have been replaced. This completes the renovation of one of the oldest houses, which should be serviceable for many years to come.

STAFF.

We are glad to say that an assistant in the Biochemistry Section has been appointed, and we are pleased to welcome Mr. J. K. Eaton, B.Sc.(Wales), M.Sc.Tech.(Manc.), who was appointed in October last.

Towards the end of the year, Mr. S. C. Pearce, B.Sc.(Lond.) came to the Statistical Section to work with Miss J. L. Edgar so as to be able to take over when she left in December to get married. He was appointed her successor in January, and we wish him every success.

Miss J. L. Edgar took charge of the Statistical Section during the absence of Mr. T. N. Hoblyn abroad, with conspicuous success, and while we wish her every happiness in her new life we are very sorry to lose her.

The Station has been fortunate in retaining the services of Dr. H. B. S. Montgomery in a dual capacity. He is collaborating with Dr. Wormald in the problems of bacterial canker of plums and cherries, the early solution of which is becoming more and more urgent, and he is helping Mr. Bagenal in the Technical Section to put across the results of our investigations. It is hoped that the Ministry of Agriculture will assist us in making some more adequate arrangements for dealing with the pressure of work in this section.

Miss B. L. Wates, Miss I. M. Fisher and Miss E. M. Lawson left us to get married and our good wishes go with them.

Miss Wates had been assisting in the Marketing Section and has now gone to Jamaica to marry Mr. G. K. Argles.

Miss I. M. Fisher and Miss E. M. Lawson were senior members of the Administrative Staff, and in view of their long service and knowledge of the office routine their loss has been keenly felt.

Mr. T. N. Hoblyn returned in September from his twelvemonth's exchange at the Dominion Experimental Farm, Ottawa, and came home via Trinidad in order to study the layout of tropical crops.

We congratulate Mr. G. H. L. Dicker on his success in obtaining a scholarship from the Ministry of Agriculture.

The Staff Council re-elected Mr. M. H. Moore as their representative on the Executive Committee for the ensuing year, and Dr. W. A. Roach was elected Secretary of the Council.

There have been a number of changes among the laboratory assistants and administrative staff, and, with regard to the former, the number has now so increased that Miss K. E. Cornford and Mr. R. G. Gambrill have been appointed as laboratory stewards in order to look after and voice the views of their juniors.

Mr. R. Cornford, laboratory assistant in the Biochemistry Section, left in July on securing another appointment, and we wish him every success at his new work.

Miss R. Hoar, laboratory assistant in the Mycology Section, left in November to take up an appointment in Maidstone.

We welcome the following new members of the staff: Miss G. O. Ardagh, Miss L. F. R. Owen, Miss J. Banks, Mr. J. Jeffery, Mr. J. J. T. Humphrey, Mr. R. Humphreys and Mr. F. R. Usmar, and wish them success in their various duties.

Mr. G. K. Argles, to everyone's regret, resigned in September from the staff of the Imperial Bureau of Horticulture and Plantation Crops, on his appointment to the Department of Agriculture in Kingston, Jamaica, and we wish him and Miss Wates every happiness in their married life. We welcome Mr. B. von Heiseler in his place.

Post-Graduate and Overseas Workers.

In March the quinquenniel inspection of the Research Station by the University of London took place; our visitors were Professor H. G. Jackson, Professor F. E. Fritsch and Mr. F. R. Coleman, and their sympathetic interest was much appreciated.

The report to the Senate was issued in November and, whilst the report of the working of the post-graduate scheme is most encouraging, certain recommendations regarding better accommodation are under consideration by our Committee.

During the year we have had twelve long-period and twenty-four short-period students working here, eight of whom are still with us. We have had six members of staff and nine post-graduates working as registered candidates for higher degrees at the University of London, and three other post-graduates have been registered as internal students of the University.

The following are to be congratulated on being awarded higher degrees: Mr. H. B. S. Montgomery, Ph.D. (Bot.) in May, for a thesis on "(i) A Study of *Fomes fraxineus* and its effect on Ash Wood, (ii) Some fundamental problems relating to the toxicity of protective fungicides"; Mr. W. T. Chang, Ph.D. (Hort.) in July for a thesis on "The Incompatibility problem of the Stock and Scion with special reference to plums, peaches and pears"; and Mr. D. N. Srivastava, Ph.D. (Hort.) in October for a thesis

on " The non-setting of pear flowers in relation to weather conditions, flower characters and cultural practice ".

Dr. W. T. Chang came here in September, 1935, with a Government Scholarship from the Department of Horticulture, Chekiang University, China, and left in September last to visit centres of horticultural research in the United States. Dr. D. N. Srivastava came in October, 1935, from Shajahanpur, United Provinces, India, and left in December last to return to India. Dr. P. K. Sen came in August, 1935, with a Government grant from the Imperial Council of Agricultural Research in India, to work on the problems of biennial bearing, and left in August last to take up his duties as physiological botanist at Sabour Fruit Research Station, Bihar. Mr. A. A. Gawad Hassan came in October, 1936, from the Entomological Section, Ministry of Agriculture, Egypt, to study the technique of spraying, and left in July, 1937, to take up further studies at Cambridge University. Mr. A. J. Duarte came in April, 1937, from Cambridge University to work in the Entomology Section, and left in October to take up his duties as Research Entomologist in Portugal. We take this opportunity of expressing the grateful thanks of the Station to these workers for the many services which in the course of their stay they have rendered to the Station, and to each and all of them we extend our very best wishes.

Special mention should be made of Mr. H. Hill, who came from the Experimental Farm at Ottawa in September, 1936, under the scheme of exchange of workers with the Dominion of Canada, when Mr. T. N. Hoblyn visited Ottawa. Mr. Hill is staying another year to complete his investigations on plant nutrition. Mr. C. E. Cornford has been continuing his climatological investigations, and Mr. B. F. G. Levy has been closely associated with Dr. Roach's injection work. The three last-named workers will be presenting their theses to the University next June.

Dr. M. Case (Kenya), Mr. P. Bick (South Africa) and Mr. E. Clarke (Irish Free State) spent periods of from two to three months here during the course of the year, and short visits varying from a few days to a month were made by the following : Miss Ebbs (Sussex), L. T. Wigg (Zanzibar), E. S. Garner (Sierra Leone), W. A. Gamble (Suffolk), F. Phillip (Palestine), Miss A. Knol and Miss M. Bakker (Holland), Miss E. B. Kidson (New Zealand), W. Mayne (India), Miss E. Schon (Austria) and P. Desaymard (France).

We are glad to welcome the following long-period students : Mr. H. B. Cannon from the Central Experimental Farm, Ottawa, and Mr. R. J. Hilton from Macdonald College, Quebec, who arrived in October last to register as candidates for higher degrees in Pomology in the University of London ; Mr. Bhola Nath Lal from Benares University, who is working for a higher degree in the Biochemistry Section under Dr. Roach ; Mr. W. F. Walker, Launceston, Tasmania, who is associated with Mr. Garner in his framework grafting experiments, and Miss B. Tornerhjelm, Sweden, who has been associated with the Pomology Section as a voluntary worker since September last.

Staff Meetings for Research Discussions.

Eleven full staff meetings were held, at each of which a different member of staff gave an account of his particular section of the research programme, and keen discussion followed. We would express our thanks to the following guest speakers who contributed to one or other of these meetings : Professor V. H. Blackman, Dr. T. Wallace, Dr. L. G. Warne of Manchester University, and Capt. R. Wellington. The purchase of an epidiascope has rendered the presentation of data and illustrations much more

convenient and less laborious than hitherto, and will in due course effect considerable economy through the saving of the expense of lantern slides.

Social Activities.

The Christmas Supper Party and Concert was held in the small packing shed on 10th January. The concert was up to the usual standard and brought to light some fresh talent. The summer outing to Hastings on 12th August was greatly enjoyed, and a photograph of the party taken on arrival provides an interesting record of the day. The programme included a visit to Bodiam Castle and to the open-air swimming pool at St. Leonards, followed by rounders on the cliffs.

The meetings of the Literary and Dramatic Society have been well attended, and at several meetings accommodation was taxed to the limit. An Amateur Photographic Club was formed during the year, and is now in a flourishing condition.

Two evening games of mixed hockey were played on the West Malling ground in April and were most enjoyable. We have no regular team, but an eleven composed of members of staff played a strong mixed eleven of the Malling Hockey Club. The two sides proved to be very evenly matched, Malling winning 2—1. The other game was between two Research Station mixed teams, and it is evident that quite a strong team can be obtained from the available talent. Twelve evening games of cricket were played during the summer, the Research Station winning five of them. The new practice wickets proved very useful and popular. The tennis court was in constant use during the summer evenings and also at week-ends in the spring and autumn. A match was played against a team raised by Mr. S. D. Barnes of East Malling, and resulted in a win for the Station team. A singles handicap tournament was played off during the summer and was won by Miss E. C. Thompson.

Collaboration.

Pomology and General.

The mosaic-free raspberry cane nurseries were visited and rogued at Reading University Farm, Shinfield, and at the County Farm Institutes of Kent, East and West Sussex.

The daughter nursery of clonal strawberries at the East Sussex Farm Institute, Plumpton, under the care of Mr. G. C. Johnson, has been continued. Most of the plants have been laid into pots for forcing with very successful results.

Dr. T. Wallace has again had fruit from one of the older manurial experiments for storage tests, and when here has given us the benefit of his advice on nutritional problems. This year it was possible for a worker from East Malling to visit Long Ashton, and we are much indebted to Dr. Wallace for his guidance and help.

There has also been close collaboration with the staff of the Ditton Laboratory in a storage experiment with fruit from our youngest apple manurial trial.

In collaboration with Mr. F. Hirst, consignments of loganberries and blackberries from clonal plants have been sent to Campden Research Station in continuance of the canning trials begun last year.

Seeds from eight varieties of selected clonal pear rootstocks, overwintered in cold store and clamp, were sent to the Department of Agriculture and Forestry, Pretoria, South Africa, in June, in order to ascertain whether they would germinate more satisfactorily than the varieties used as pear rootstocks in this country.

Plant Breeding and New Varieties.

The joint work in the trial of new varieties of hops has been continued in collaboration with Professor E. S. Salmon and Mr. A. H. Burgess of Wye College. Collaboration with Mr. M. B. Crane of the John Innes Horticultural Institution in the breeding of new races of rootstocks resistant to Woolly Aphis and new strawberry varieties for pomological and pathological tests is still proceeding.

Horticultural Meteorological Investigations.

Special thanks are again due to Mr. E. G. Bilham of the Meteorological Office, Air Ministry, and Mr. E. L. Davies of the Meteorological Department, Experimental Station, Porton, for the interest they have shown and guidance they have given in the development of these micro-climatological studies, and to the Instruments Department for the loan of certain apparatus. Thanks are also due to all those numerous persons who have helped in this work or who have given permission for work to be carried out on their land. Of these, special thanks are due to John Lewis Estates, Leckford, Hampshire, and to Mr. F. J. Goldsmith, New Farm, Leckford, Hampshire.

Physiology.

The valuable and long-established tradition of close collaboration with the Physiological Department of the Imperial College has been maintained through Dr. H. L. Pearse of that department, who continues to give his full time to research work in the Physiology Section. Arrangements have been made for Dr. L. G. G. Warne of the Botanical Department, Victoria University, Manchester, to collaborate with this section in an investigation of the water conductivity of the trunks of double-worked apple trees.

Bio-Chemistry.

The work in collaboration with Dr. A. C. Hulme of the Ditton Laboratory on the effect of injecting various substances into apple trees on the chemical composition and keeping quality of the fruit has been continued. The study of the effect of various injections into apple trees on the disease resistance of the fruit has been continued this year, in collaboration with Dr. A. S. Horne of the Imperial College of Science. Throughout the year there has been close collaboration with Messrs. W. G. Kent, C. R. Thompson and J. B. Duggan, the Kent County Fruit Advisory Officers, on problems in which they and this section are mutually interested. Mr. J. B. Duggan is specially interested in testing the possibility of using injection methods in advisory work and commercial practice, and he is collaborating in most of the work carried out by this section in outside trials (see page 2).

Plant Pathology.

In collaboration with Dr. G. H. Berkeley of the Dominion Laboratory of Plant Pathology, St. Catharines, Ontario, imported Canadian peaches have again been examined for incidence of disease, particularly Brown Rot.

Mr. R. V. Harris has collaborated with Mr. B. S. Furneaux of Wye College on the soil aspects of Verticillium Wilt of hops (see Outside Trials) and with Dr. A. A. Hildebrand of the Dominion Laboratory of Plant Pathology, St. Catharines, Ontario, on strawberry virus disease. A report of joint research at the two laboratories was published this year in the *Canadian Journal of Research.*

Mr. M. H. Moore has continued to collaborate with the Essex County Advisory Officers, Messrs. H. Fraser and O. G. Dorey, in their investigation into the causes of Branch-Blistering of apple trees in Essex.

Entomology.

Dr. Massee has continued his banding experiments with material supplied by Imperial Chemical Industries, Ltd., as last year.

Insecticides and Fungicides.

Dr. H. Shaw and Mr. W. Steer have again enjoyed the co-operation of the Fuel Research Station, Greenwich, and of the Gas Light & Coke Co., Ltd., in the survey of the ovicidal properties of tar distillates.

Messrs. Technical Products, Ltd., Imperial Chemical Industries, Ltd., and A. Boake, Roberts, Ltd., have supplied the materials for several investigations.

Outside Trials.

There has been close collaboration between the Pomology Staff, Mr. B. S. Furneaux of Wye College and the County Horticultural Staff in connection with the small experimental plots established on various farms as a result of those sections of the Fruit Soils Survey so far carried out. A necessary factor in the success of such a scheme is the co-operation of the farming community, and we acknowledge much help in this direction.

The Morello cherry rootstock trial planted by Mr. D. J. Moor, Nichol Farm, Teynham, has again been visited and growth records taken.

The runner beds established from our clonal strawberries at Spring Grove Farm, Wye, by Mr. Arthur Amos, have once again proved very successful, the percentage of plants rogued out being very small.

The Bio-Chemistry Section is carrying out injection trials on chlorosis in fruit trees at Swanley Horticultural College in collaboration with members of the staff.

Similar trials are also being carried out in a cherry orchard at Sittingbourne, in apple plantations at Sutton Valence and at Linton, and in a pear plantation at Cliffe. They are also investigating the unsatisfactory performance of certain plum and cherry orchards at Teynham in collaboration with Mr. R. Hart, the Principal of the Kent Farm Institute. The Entomological Section again conducted trials in the control of Apple Blossom Weevil and Codling Moth on a farm at East Malling. Mr. W. Steer has carried out Plum Sawfly spraying trials on farms at Chelsfield, Addington and East Farleigh, and has also carried out a Codling spraying trial at a farm near Swanley.

In the Mycological Section, Mr. R. V. Harris, in conjunction with Mr. B. S. Furneaux of Wye College, has continued his investigations into Hop Verticillium Wilt on farms at Penshurst and Paddock Wood.

We would like to take this opportunity of expressing our most grateful thanks to the owners of the plantations and orchards on which these outside trials have been carried out and for their hearty collaboration in making them a success.

Advisory Work.

Correspondence.

The number of letters written in the course of the year in answer to enquiries amounted to 1,713, of which 439 came from Kent, 126 from Sussex, 97 from Essex, 87 from Surrey, 781 from other parts of the United Kingdom, and 133 from overseas.

To these written replies should be added a steady and increasing use of the telephone on advisory matters, more especially during the spraying season. Members are asked to note that all telephonic enquiries on advisory matters should be made in the first instance to the Technical Section (Telephone Number, Aylesford 7294).

Visits.

Members of Staff paid 226 visits in the course of the year, of which 155 were made to growers in Kent. The County Advisory Staff have maintained close liaison with the Station, and we would again record our thanks to Mr. W. G. Kent and Mr. C. R. Thompson of the Kent Education Committee, to Mr. R. Hart and Mr. J. B. Duggan of the Kent Farm Institute, and to Mr. B. S. Furneaux of Wye College, for their continued help and co-operation. Mr. Kent and Mr. Thompson have paid 620 visits in the county during the course of the year. Mr. N. H. Grubb, Mr. R. V. Harris and Mr. W. S. Rogers visited the daughter nurseries of clonal raspberries and strawberries in Kent and Sussex. Mr. R. V. Harris, in company with Capt. R. Wellington, Worth, Hele, Bradninch, Devon, made a tour of soft fruit areas in Scotland and Ireland with the main object of discovering promising stocks of strawberries and of investigating the circumstances of their health. Mr. H. C. Chapelow visited the Southport Flower Show in August at the request of the Secretary of the Advice Bureau, and was in attendance throughout the Show to answer enquiries on fruit growing.

The services of members of staff have been given as judges at the following commercial fruit shows: The Imperial Fruit Show (Birmingham), Marden, East Kent (Canterbury), North Kent (Dartford), Cheshire County (Knutsford) and Wisbech.

Lectures, Demonstrations and Conferences.

Lectures.

Eighteen lectures were given by members of staff during the year, fourteen of these being lectures under the Ministry of Agriculture Extension Lecture Scheme.

Demonstrations and Open Days.

An Open Day organized on 16th March brought an attendance of approximately 300 fruit growers. The morning's programme included a demonstration of hand-operated spraying machinery and a demonstration in the mixing and application of petroleum sprays for the control of capsid bug and red spider. In the afternoon a conference on Bacterial Die-back in plums and cherries was opened by Dr. H. Wormald and Dr. H. B. S. Montgomery.

On 2nd June an Open Day for local residents brought an attendance of 60, who made a tour of the experimental plantations and laboratories under the guidance of members of the staff.

On 6th September an Open Day was held at which we tried the experiment of taking a single crop of general interest to fruit growers, and devoting the day's programme to that particular crop. In this case it was a Worcester Pearmain Day ; in the morning short talks were given by members of staff on rootstocks, manuring and pruning of Worcester Pearmain, and in the afternoon, after two short talks on the marketing of Worcester and on the breeding of new varieties of the Worcester season, a short conference was held in the Packhouse at which various authorities expressed their views on Worcester Pearmain as a market apple.

The services of Mr. Garner have been much in demand through the grafting season for demonstrations of different methods of framework grafting, and Mr. Witt has given several demonstrations in the grafting and budding of walnuts. Dr. Roach gave a demonstration of his injection methods before the Royal Empire Society in May, and he and Mr. Levy have frequently been called upon during the summer months to demonstrate these methods to visitors. Mr. Grubb gave two pruning demonstrations in the Wisbech area on 14th and 15th January.

Conferences, etc.

The Director attended the Annual Meeting of the Horticultural Education Association at Reading in September. Mr. A. C. Painter attended a conference of cold store and gas store owners organized by the N.F.U. in London in January. Mr. H. C. Chapelow attended a meeting of Meteorological Recording Officers and a meeting of the Royal Meteorological Society in London in November. Mr. W. A. Bane attended the International Grassland Congress held at Aberystwyth in July. Mr. J. Amos attended a Hop Conference at Wye College in January, and in the absence of Mr. F. H. Beard, owing to illness, Mr. Amos read a paper by him on Cultural Trials with Hops. Several members of staff spoke at a joint meeting of the Wye Provincial and Eastern Counties Provincial Conferences held here on 5th and 6th July. Mr. H. M. Tydeman attended the inaugural meeting of the Association for the Study of Systematics in Relation to General Biology, in London in June. Dr. A. M. Massee, Mr. R. V. Harris, Mr. M. H. Moore and Dr. H. Shaw attended a Conference of Advisory Entomologists and Mycologists held in London in December, and took an active part in the discussion.

Dr. A. M. Massee opened a discussion at a Strawberry Conference held at Wrexham in February; he and Mr. R. M. Greenslade attended a demonstration of methods of fumigating and of atomized pyrethrum sprays at the warehouses of the Australian Dried Fruits Board in London in December. Dr. Massee also visited Jealott's Hill Research Station (I.C.I.) with the Sub-Committee of Insecticides and Fungicides of the Agricultural Research Council in July.

At a meeting to discuss the use of growth substances for stimulating root formation held at the Royal Botanic Gardens, Kew, on 6th November, Dr. H. L. Pearse read a paper on the use of growth substances for rooting stem cuttings of deciduous fruit trees. He also read a paper on the reaction of leafless woody cuttings to treatment with root-forming substances at a Conference of the Society for Experimental Biology held at the London School of Hygiene and Tropical Medicine on 22nd December.

Dr. H. Shaw and Mr. W. Steer attended a meeting of the Association of Applied Biologists, in London in February. Dr. H. Shaw contributed to a symposium on Wetting and Detergency held at the Imperial College, London, in February; he also attended two meetings of the Society of Chemical Industry in London in May and November. Dr. H. Wormald has again served on the Council and Plant Pathological Committee of the British Mycological Society, and on the Council of the Association of Applied Biologists; he has been elected Vice-President of the Association for the ensuing year.

Exhibits.

At the Chelsea Flower Show in May we staged an exhibit dealing with framework grafting and inarching. At the County Agricultural Show held at Canterbury in July, we co-operated with the County Education Authorities in a joint exhibit entitled "Good Orchards for Bad". An exhibit on methods of framework grafting was staged

at the Tunbridge Wells Show in July and at the Imperial Fruit Show at Birmingham in November. A small exhibit of walnut rootstocks was sent to the Royal Counties Show at Reading in June, and small loan exhibits on grafting were sent to Rye Grammar School in June, to the Nature Study Exhibition, School of Nature Study, London, in September, and to the Surrey Ladies' Club Show, Worplesdon, Surrey, in October. A collection of photomicrographs made by the Pomology Section of transverse sections of the wood of stems and roots of apple rootstocks was sent to an exhibition of photomicrographs organized by the Royal Photographic Society in London in January.

Visitors.

Visitors were received at the Station on 253 days in the year, a total of 2,817 was recorded. This number included 49 organized parties and some 200 visitors from overseas. Among the parties received were the Land Surveyors' Club, the Cultur en Handel party of Belgian fruit growers, the Association of Horticultural Teachers from Zeeland, Holland, and the Redhill, Reigate and District Gardeners' Association. We received, as usual, periodical visits from Wye College, Borden Farm Institute and Swanley College, and in addition parties of students visited us from University College, London, the Royal College of Science, and Oaklands Farm Institute and Waterperry House Horticultural School, Oxford.

On the more strictly educational side we have received eighteen organized visits from classes of Kent Education Committee teachers and five from schools in Kent. The Kent Education Committee have given recognition of the fact that such work is really outside the scope of our normal activities by giving assistance for teachers' classes, and arrangements have now been made whereby Mr. Chapelow's services will be more fully available than hitherto for this type of work. A syllabus has been drawn up in conjunction with Mr. H. C. Elsdon of the Kent Education Committee for a series of classes in the theory and practice of fruit culture to be given to Kent Schoolmasters. Under this scheme also, part of Mr. Chapelow's services will be available for taking parties of school teachers and of school children round the Station, and for lectures and demonstrations in the county.

Distribution of Rootstocks and Experimental Material.

Rootstocks.

We have been able to send out, during the year, a further half-million rootstocks. The majority of these were distributed to nurserymen and growers in the British Isles but about 130,000 were sent longer distances, 42,000 going to the overseas Empire and the remainder to seventeen foreign countries.

Trees and Bushes.

The work of raising and distributing pedigree trees and clonal bush fruit has been reduced, as sources of supply have become established from material purchased from the Station, and only comparatively small lots have gone out to members. Research and educational centres still look to us for material of known history. Forty-eight collections of material have been sent to such centres.

Strawberries.

The requests received from growers for our clonal " disease-free " Royal Sovereign plants have been exceptionally numerous and it has only been possible to supply a proportion of the quantities required. We have been unable to send plants to many members who applied late in the season.

Further small consignments have been sent to Canada and Tasmania for testing under conditions in those countries.

Rather over half a million runners were distributed during the season.

Hops.

Owing to the grower's acreage being limited under the Hops Marketing Board Scheme, any new plantings must be balanced by the grubbing of gardens. Growers are therefore naturally rather reluctant to plant the New Varieties when they are getting good prices for the established sorts. Nevertheless, there is a moderate demand for rooted sets of the named seedlings, the demand this season being greater than in the previous season. The early seedling X35 has been named Early Promise and introduced to growers. Collections of the New Varieties have been sent to Canada (a repeat order) and to Latvia.

Fruit.

Fruit for storage, canning, and other trials have been sent to Ditton Laboratory, Long Ashton Research Station, the Fruit Preservation Research Station, Campden, the John Innes Horticultural Institution, Merton, and the Imperial College of Science, London. We again had the honour of sending fruit to the Worshipful Company of Fruiterers for their St. Paul's Day Dinner in January and for inclusion in their presentation of fruit to the Lord Mayor in October.

Station's Publications.

Sixty-eight scientific papers and six bulletins of a popular nature were published during the year ; the titles and summaries of these papers appear in the Annual Report. A certain number of sets of the Annual Report from 1924 to 1933 inclusive (excluding 1927) are available on application to the Secretary. A complete list of available publications, together with their price, can also be obtained from the same source.

Journal of Pomology and Horticultural Science.

The executive and editorial work has continued to be done from East Malling by Professor B. T. P. Barker and Dr. R. G. Hatton as Joint Editors, with Dr. G. H. Pethybridge acting as Assistant Editor.

In order to facilitate the development which has taken place in recent years, in publishing the results of researches carried out in other parts of the British Commonwealth, the Publication Committee has appointed Associate Editors overseas. It is hoped thereby to extend the scope of the Journal and at the same time bring to a wider public the results of the work being done by horticulturists throughout the Commonwealth.

Library.

With a rapidly growing Library, the Committee (Chairman, Mr. R. V. Harris) has been particularly concerned during the present year with problems of accommodation and of achieving that standard of ready availability of literature upon which the usefulness of the Library as an essential instrument of research depends.

The Committee again records its indebtedness to the Imperial Bureau of Horticulture and Plantation Crops for continuing to fulfil the duties of Librarian.

The serious congestion mentioned in last year's report is rapidly approaching a critical point. Temporary relief has been afforded by the disposal of duplicates and the temporary removal into makeshift storage of literature rarely in demand.

During the year an improved system of borrowing has been adopted and is operating satisfactorily.

Library rules have been revised and codified and, in case members' privileges are not generally known, attention is particularly drawn to the following extract :—

" The Library is available to Associate Members of the Station for reference at any time within the normal working hours on application to the Enquiry Office."

The present financial situation is causing the Committee serious concern. For the last eight years the library grant has remained fixed in amount. It will be realized, however, that, allowing only for normal expansion, annual maintenance charges are continually increasing. As a result the sum available for the purpose of new books and periodicals becomes correspondingly less each year and is now quite inadequate to cope with the applications received. In this connection the advent of post-graduate workers naturally increases these serious demands. This growing restriction of available funds has particularly made itself felt in the matter of the older and " out of print " horticultural classics, systematic works, pomonas, etc., the purchase of which, although extremely desirable, is out of the question under present conditions. The Committee recalls with gratitude the indebtedness of the Library in the past to members and friends for valuable gifts of books, including, for example, Hogg's *British Pomology, The Herefordshire Pomona* and early volumes of the *Journal of the Royal Horticultural Society*. It feels sure that if the need for this class of book is generally known our members will bear the Station Library in mind when they are sorting their own collections, to the continued advantage of the former.

The Committee is indebted to Dr. A. M. Massee for his gift during the past year of his book *Pests of Fruit and Hops* and to the University of London for " Centenary Commemoration Volume, 1836-1936 ".

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